

ABSTRACT

An electric power generation system has a multiple jet ejector assembly for recirculating an exhaust stream. The system includes a fuel cell stack having a reactant stream inlet, a reactant stream outlet and at least one fuel cell. A pressurized reactant supply provides a reactant to the multiple jet ejector assembly. The multiple jet ejector assembly includes two motive flow inlets, one suction inlet, fluidly connected to the reactant stream outlet to receive a recirculated flow from the fuel cell stack, and one discharge outlet, fluidly connected to the reactant stream inlet to provide an inlet stream to the fuel cell stack. A pressure regulator is interposed between the pressurized reactant supply and the two motive flow inlets of the multiple jet ejector assembly. A first solenoid valve is interposed between the first motive flow inlet and the regulator. A second solenoid valve is interposed between the second motive flow inlet and the regulator. A by-pass line connects the pressurized reactant supply to the second motive flow inlet. A by-pass solenoid valve is interposed in the bypass line between the pressurized reactant supply and the second motive flow inlet. During low-load operating conditions, the second solenoid valve is open and the first and by-pass solenoid valves are closed, so that pressurized reactant, controlled by the regulator, is directed to the second motive flow inlet. During high-load operating conditions, the second solenoid valve is closed and the first and by-pass solenoid valves are open, so that pressurized reactant, controlled by the regulator, is directed to the first motive flow inlet and pressurized reactant, not controlled by the regulator, is directed to the second motive flow inlet.